

CLAIMS

What is claimed is:

1. A method of manufacturing a substrate, the method comprising:
preparing an auxiliary substrate, which has at least one flat side;
forming a first protective layer on the auxiliary substrate, the first protective layer being insoluble in a liquid etchant;
forming at least one thin-film layer on the first protective layer;
bonding a flexible main substrate onto the thin-film layer; and
etching the auxiliary substrate to remove the auxiliary substrate.
2. The method of claim 1, wherein the auxiliary substrate is made of glass, and the flexible main substrate is made of a synthetic resin material having flexibility.
3. A method of manufacturing an organic electroluminescent display device, the method comprising:
preparing an auxiliary substrate, which has a flat side and is non-flexible;
forming a first protective layer on the auxiliary substrate;
forming an organic electroluminescent unit on the first protective layer;
bonding a flexible main substrate onto the organic electroluminescent unit; and
etching the auxiliary substrate to remove the auxiliary substrate.
4. The method of claim 3, further comprising forming a second protective layer for planarizing the organic electroluminescent unit to be disposed between the organic electroluminescent unit and the flexible main substrate, before bonding the flexible main substrate.
5. The method of claim 3, wherein forming the organic electroluminescent unit comprises:
forming a thin-film transistor layer on the first protective layer;
forming a first electrode layer on the first protective layer to be electrically connected to the thin-film transistor layer;

forming an insulation layer such that a predetermined portion of the first electrode layer is exposed;

forming an organic layer on the first electrode layer; and

forming a second electrode layer on the insulation layer exposing the organic layer.

6. The method of claim 3, further comprising forming a third protective layer for protecting the flexible main substrate from a liquid etchant on the flexible main substrate, after bonding the flexible main substrate.

7. The method of claim 3, wherein the etching is performed using a liquid etchant which etches a glass material.

8. The method of claim 7, wherein the liquid etchant is one selected from the group consisting of hydrofluoric acid, hydrochloric acid, and a mixture thereof.

9. The method of claim 3, further comprising forming an organic layer protector, protecting the organic electroluminescent unit, on the first protection layer from which the auxiliary substrate is removed, after etching the auxiliary substrate.

10. A method of manufacturing an organic electroluminescent display device, the method comprising:

preparing an auxiliary substrate, which has a flat side;

forming a first protective layer on the auxiliary substrate;

forming an organic electroluminescent unit on the first protective layer;

bonding a flexible main substrate onto the organic electroluminescent unit; and

etching the auxiliary substrate to have a thickness allowing flexibility.

11. The method of claim 10, wherein the auxiliary substrate is made of glass, and the flexible main substrate is made of a synthetic resin material having flexibility.

12. The method of claim 10, further comprising forming a second protective layer for planarizing the organic electroluminescent unit, to be disposed between the organic electroluminescent unit and the flexible main substrate, before bonding the flexible main substrate.

13. The method of claim 10, wherein forming the organic electroluminescent unit comprises:

- forming a thin-film transistor layer on the first protective layer;
- forming a first electrode layer on the first protective layer to be electrically connected to the thin-film transistor layer;
- forming an insulation layer such that a predetermined portion of the first electrode layer is exposed;
- forming an organic layer on the first electrode layer; and
- forming a second electrode layer on the insulation layer exposing the organic layer.

14. The method of claim 10, further comprising forming a third protective layer protecting the flexible main substrate from a liquid etchant on the flexible main substrate, after bonding the flexible main substrate.

15. The method of claim 10, wherein the etching is performed using a liquid etchant which is one selected from the group consisting of hydrofluoric acid, hydrochloric acid, and a mixture thereof.

16. The method of claim 10, further comprising forming an organic layer protector protecting the organic electroluminescent unit on the first protection layer from which the auxiliary substrate is removed, after etching the auxiliary substrate.

17. An organic electroluminescent display device comprising:
- a main substrate, which has a flat side and is flexible;
 - a second protective layer, which is formed on the main substrate;
 - an organic electroluminescent unit, which is formed on the second protective layer;
 - a first protective layer, which is formed on the organic electroluminescent unit; and
 - a sealing portion, which hermetically seals the organic electroluminescent unit.

18. The organic electroluminescent display device of claim 17, wherein the first protective layer comprises a plurality of layers to prevent permeation of oxygen, moisture, and a liquid etchant.

19. The organic electroluminescent display device of claim 17, further comprising a flexible sub-substrate bonded on to the first protective layer.

20. The organic electroluminescent display device of claim 19, wherein the flexible sub-substrate is made of a synthetic resin material or glass.

21. The organic electroluminescent display device of claim 17, wherein the organic electroluminescent unit comprises:

- a second electrode layer, which is formed on the second protective layer;
- an organic layer, which is formed on the second electrode layer;
- a first electrode layer, which is formed on the organic layer; and
- a thin-film transistor layer, which is connected to the first electrode layer penetrating through an insulation layer to drive the first electrode layer.

22. The organic electroluminescent display device of claim 21, wherein the thin-film transistor is positioned on the second electrode layer far away from the main substrate.

23. The organic electroluminescent display device of claim 19, further comprising an organic protection layer formed on the flexible sub-substrate.

24. The organic electroluminescent display device of claim 17, further comprising an organic protection layer formed on the first protective layer.

25. The organic electroluminescent display device of claim 17, wherein the main substrate comprises a plurality of layers to prevent permeation of oxygen and moisture.